

# A review of the public health response to two pertussis outbreaks in Maryland: Lessons Learned

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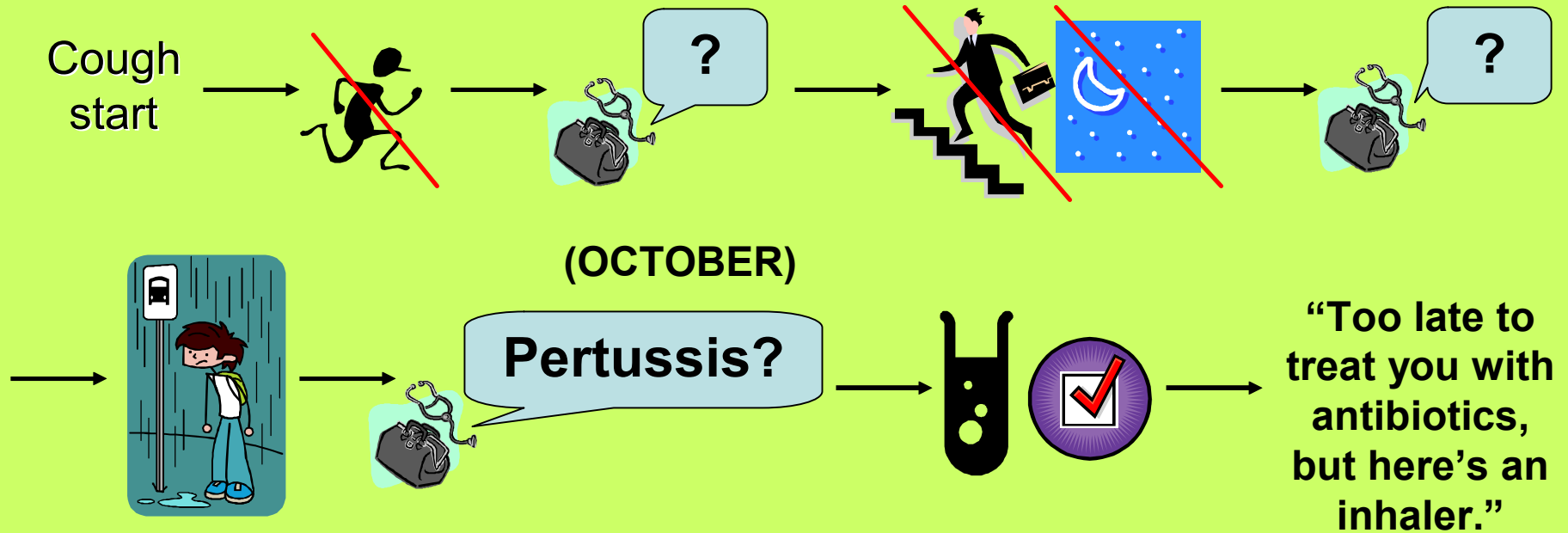
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# QUIZ:

- **What is the common name for pertussis?**
- **Which of the following is NOT true?**
  - a) Pertussis is the only vaccine-preventable disease on the rise in the U.S.
  - b) Immunity (from a vaccine or previous infection) is life-long
  - c) There is a vaccine for adults
  - d) It can be treated with antibiotics

# In September of 2000...

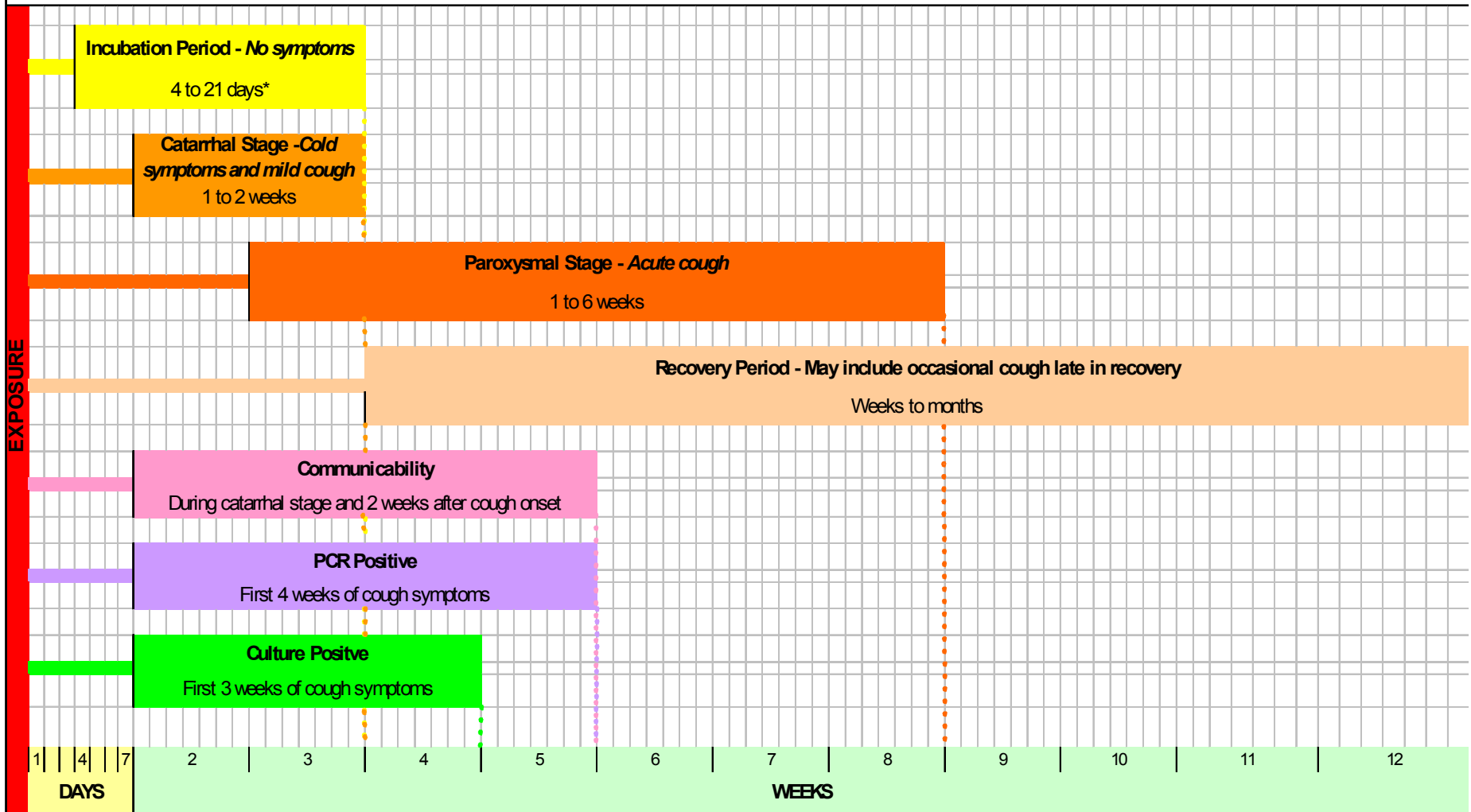
A 22-year old female (Patient A) in MA begins a cough...



→ In **November**,  
Patient A was  
able to exercise  
again.

Note: Patient A's parents (not household contacts) who traveled with her to Maryland in **August** also experienced similar symptoms - including fainting and rib fractures...

# Lab Diagnosis and Clinical Stages of Pertussis

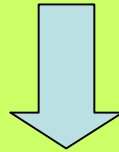


\* Range incubation period, 4-21 days. Average incubation period, 7-10 days

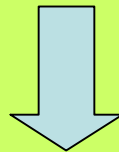
Source: Centers for Disease Control and Prevention. Epidemiology and Prevention of Vaccine-Preventable Diseases. Atkinson W, Hamborsky J, McIntyre L, Wolfe S, eds. 9th ed. Washington D.C.: Public Health Foundation, 2006

# Objectives

Review two outbreaks that occurred in Maryland



Identify strengths and weaknesses in the response



Provide information and tools for use in future outbreaks for local health departments (LHD) and the Maryland Department of Health and Mental Hygiene (DHMH) staff

# Outbreak 1: Hospital Setting

## *Summary:*

- A man (Patient A) was admitted to Hospital X 14-22 and 23-24 December, 2005 with laboratory confirmed pertussis
- On 25 December, a health care worker (HCW) who worked on Patient A's floor during the same time period started a cough and was prescribed Erythromycin but was not diagnosed with pertussis
- On 6 January, she was tested for pertussis, but the results were negative.
- An investigation by LHDs and DHMH identified 117 contacts of the HCW

# Outbreak 1: Hospital Setting (cont.)

*A complicated outbreak:*

- Between HCW's exposure and onset she was on a cruise in the Caribbean (18-25 December)
- The HCW worked in the newborn nursery, obstetrics unit and the intensive care unit
- How many contacts did the HCW have? Both at the hospital and at home?
- Why did she test negative for pertussis?
- How are those darn samples getting to the lab?

# Outbreak 2: Community Setting

## *Summary:*

- A parent and then 3 children were clinically diagnosed with pertussis.
- They were all tested the same day - the children were positive, the parent was not.
- The parent was a teacher and the 3 children went to schools in different counties, and one in the State of PA.
- A multi-jurisdictional investigation ensued and >140 contacts of the family, including bus mates and school mates, were identified.



## Outbreak 2: Community Setting (cont.)

*Another complicated outbreak:*

- Who was a close contact?
- Limitations of laboratory testing
- Decisions to chemoprophylax
- Vaccination concerns

# Summary of Needs

- More information (guidelines, investigation tools) needed
- Information should be consistent and accessible to LHDs, DHMH, as well as health care providers, schools, etc...
- Communication is a key part of outbreak investigation
- Timeliness (prompt reporting, clinical diagnosis and specimen collection) could mitigate outbreaks
- Rationale for vaccination needed

## Documents created to address investigator needs

<i><b>Provided Material</b></i>	<i><b>Justification</b></i>	<i><b>Instructions for Use</b></i>
<b>Protocol for outbreak investigation</b> <i>(Filename: 1.Protocol for Pertussis Case &amp; Outbreak Investigation.doc)</i>	<ul style="list-style-type: none"> <li>-Response to requests from LHDs for a simple, standardized protocol for case and outbreak investigation</li> <li>-Assist new employees during outbreak investigations</li> <li>-Guidance for a comparatively rare outbreak disease</li> </ul>	Use as a template for outbreak investigations. Refer to Center for Immunization's Pertussis Guidelines (source) for case investigation and for further detail on investigation, management and control measures.
<b>Outbreak management form</b> <i>(Filename: 2.Pertussis Outbreak Management Sheet.doc)</i>	<ul style="list-style-type: none"> <li>-Establish clear channels of communications between parties</li> <li>-Provide a list of contact persons</li> <li>-Provide an explicit case definition and contact definition</li> </ul>	All parties should complete this form at the onset of the outbreak together (e.g. over a conference call). Fill in all fields and fax to the fax numbers listed. Form should be referred throughout the outbreak investigation.
<b>Screening questionnaire for a hospital</b> <i>(Filename: 3.Pertussis Screening Questionnaire for a Hospital.doc)</i>	<ul style="list-style-type: none"> <li>-Define case by a list of symptoms</li> <li>-Method of active surveillance at outbreak location (hospital)</li> </ul>	This form should be modified to fit the nature of the case or outbreak investigation. Investigator should insert the correct information where there are <i>italics</i> .
<b>Pertussis fact sheet</b> <i>(Filename: 4.Pertussis Fact Sheet.doc)</i>	<ul style="list-style-type: none"> <li>-Fast and accurate information for outbreak investigators and community</li> <li>-Vaccine recommendations</li> </ul>	Copy and distribute to cases and contacts as they are identified during a case or outbreak investigation.
<b>Letter templates (to be sent to health care providers, schools)</b> <i>(Filenames: 5.Letter to Health Care Providers Template.doc; 6.Letter to Parents Template.doc!)</i>	<ul style="list-style-type: none"> <li>-Universal tool that can be tailored to the case or outbreak in moments</li> <li>-Standardized method of communication and surveillance for LHD</li> </ul>	Send to schools, healthcare providers or other institutions to alert them of a case or outbreak. Encourage surveillance of new cases and to report new cases to the LHD.

# Created Material: Protocol for pertussis outbreak investigation

## PROTOCOL FOR PERTUSSIS CASE & OUTBREAK INVESTIGATION

1. DHMH receives call (either Center for Immunization or DOOI) from Local Health Department (LHD); laboratory (private or state); healthcare provider; school or childcare provider; or long term care facility.

2. Determine if a single (i.) **case** or an (ii.) **outbreak** (defined as 2 or more lab confirmed cases or epidemiologically linked to a lab confirmed case within a 21-day incubation period):

### **i. Case:**

- A. Notify: Center for Immunization Epidemiologist if positive (410) xxx-xxxx
- B. Follow case investigation procedure as usual (*Maryland Pertussis Surveillance Protocol*)

### **ii. Outbreak:**

- A. Notify the following institutions: (*check after notified*)
  - \_\_\_ Local Health Department(s) – *usually the notifier*
  - \_\_\_ Center for Immunization Epidemiologist (410) xxx-xxxx
  - \_\_\_ Outbreak Epidemiologist (410) xxx-xxxx
    - \*Complete *Disease Outbreak Preliminary Report* (a.k.a. Pink Sheet)
  - \_\_\_ DHMH laboratory (notify to prepare testing kits and transport to LHD) (410) xxx-xxxx
- B. Establish lead investigator: If it is **not** the LHD, then indicate who is lead (Center for Immunization or DOOI) & establish protocol for channels of communication between LHD, DOOI, Center for Immunization, laboratory and the site of outbreak using *Pertussis Outbreak Management Sheet*
  - \*Complete *Pertussis Outbreak Management Sheet* (jointly by all institutions)
- C. Identify and define confirmed, probable and suspect cases
  - LHD requests laboratory testing
  - LHD recommends appropriate treatment, prophylaxis, vaccination, exclusion from work or school as defined by the CDC guidelines (see link below)
  - LHD distributes *Pertussis Fact Sheet* to cases
  - LHD (of index case's county of residence) enters case information into NEDSS
- D. Identify and define contacts
  - Recommend appropriate prophylaxis, vaccination, and/or exclusion criteria
  - Distribute *Pertussis Fact Sheet* and *Parent/Health care provider letters*
  - Monitor contacts for 21 days after last exposure (1 incubation period)
  - Consider prophylaxis and vaccination options (see reference below for details)
- E. Complete outbreak reporting
  - LHD:** 1) Update NEDSS database; 2) Complete *Pertussis Surveillance Worksheet(s)* & send to Center for Immunization; 3) Complete *Outbreak Summary Report for Pertussis Cluster* and narrative & send to DOOI within two months
  - Center for Immunization:** Provide quality control feedback to LHD on Pertussis Surveillance Worksheet (e.g. ensure that the worksheet was completed appropriately and concordant with entry into NEDSS)
  - DOOI:** 1) Receive *Outbreak Summary Report for Pertussis Cluster* and narrative report from LHD within two months of the date the outbreak was reported to DHMH; 2) Update information

# Created Material: Pertussis screening questionnaire

## Employee Pertussis Screening Questionnaire for a Hospital

Today's date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Name: \_\_\_\_\_ Home County: \_\_\_\_\_ Age: \_\_\_\_\_

### Employment Information

Job title: \_\_\_\_\_

Do you have direct patient contact? Yes \_\_\_\_ No \_\_\_\_ (\*\*For non-hospital settings, change as appropriate\*\*)

What unit (*or floor*) do you work in? \_\_\_\_\_

### Clinical Information

Since \_\_*insert date here*\_\_, have you had any of the following symptoms (*change as necessary*):

Symptom	Yes	No	If yes, date symptom started	If yes, date symptom stopped
Cough				
Inspiratory whoop after coughing				
Vomiting after coughing				
Apnea (brief periods where breathing stopped)				
Runny nose				
Nasal congestion				
Sore throat				
Fever (list highest temperature measured ____ )				
Other symptom _____				
Other symptom _____				

Did you see a healthcare provider for your symptoms?      Yes      No  
If yes, list the medical diagnosis (i.e. bronchitis, pertussis, etc.) \_\_\_\_\_

# Created Material: Letter template for parent or guardian

## **FOR IMMEDIATE ATTENTION**

(Date)

Dear Parent or Guardian,

Today we learned of a student with whooping cough (also called pertussis) at \_\_ School. Most children are vaccinated for whooping cough (with the DTaP vaccine), but it is possible that your child could contract the disease. Whooping cough is spread through the air when a sick person sneezes or coughs. It begins with a mild cough and sometimes a low-grade fever. After about two weeks the cough becomes worse. Sometimes it is difficult to breathe while coughing, and the person may vomit after coughing.

The \_\_ County Health Department and the Maryland Department of Health and Mental Hygiene recommend that all friends of this student go to their health-care providers to seek care and medicine, if needed. Also, be sure to check with your health care provider that all your children are up-to-date with all of their immunizations.

Whooping cough, and many other diseases, can be prevented by covering your mouth when you cough and frequently washing your hands. Remind your family!

If you have any questions, please call your health care provider or the \_\_ County Health Department's Communicable Disease Program at (xxx) xxx-xxxx.

Thank you,

(Name and title)

# Possible Weaknesses

- Too many documents / just added work
- Time to adjust to new methods and materials
- On-line documents can get “lost” in the system



# Thanks to...

★ Leslie Edwards – *dedicated preceptor*

★ DOOI (Gita, Mary, Kirsten, Sonhi, Dipti – *a great team*) &  
Center for Immunization (Daphne, Mohamed, Greg – *pertussis gurus*)

★ Dipti, Dr. Ibrahim, Diane – *goes without saying – thank you*

★ Jacky Jennings - *patient school advisor*

★ My poor roommate, Jason – *also very patient!*

★ All of you in the audience with low blood sugar –  
thanks for listening and enjoy lunch! ★